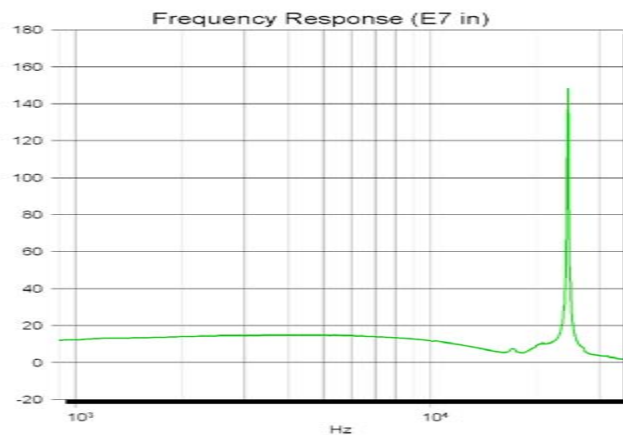


# High Piezoelectric Coefficient Ferroelectric Films for MEMS Applications

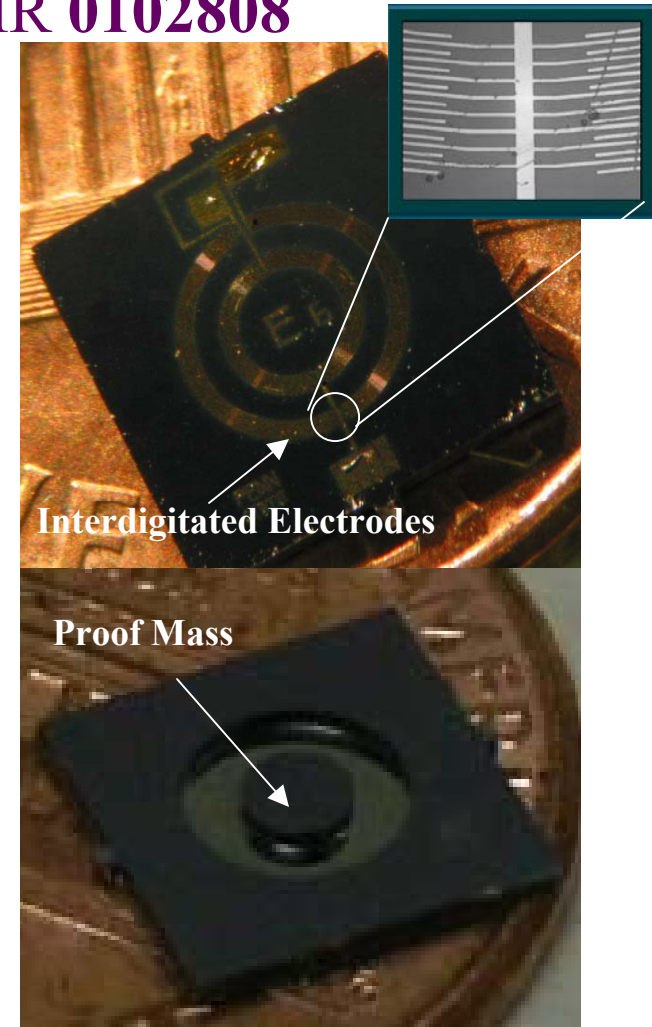
Susan Troler-McKinstry and Srinivas Tadigadapa  
Pennsylvania State University, DMR 0102808

Piezoelectric bulk micromachined accelerometers were designed and fabricated using MEMS fabrication techniques. These devices use interdigitated electrodes to exploit a combination of the  $d_{33}$  and  $d_{31}$  piezoelectric responses of lead zirconate titanate (PZT) thin films. High voltage sensitivities of 1.3-7.9 mV/g with corresponding resonance frequencies in the range of 23-12 kHz were obtained.



**Frequency Response of the Accelerometer**

*Sensors and Actuators A*, **107**, 26, (2003)



**Optical Images of the PZT MEMS Accelerometer**

# High Piezoelectric Coefficient Ferroelectric Films for MEMS Applications

Susan Trolier-McKinstry and Srinivas Tadigadapa

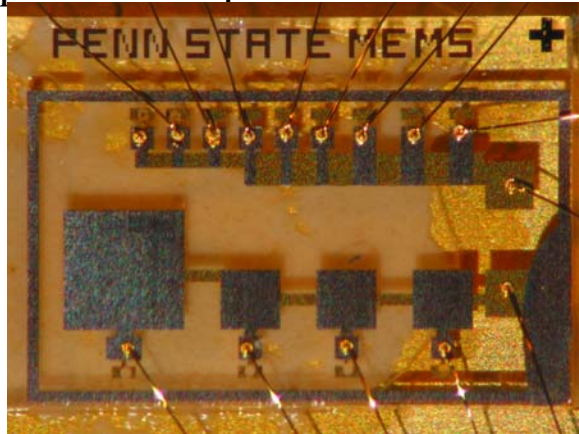
Pennsylvania State University, DMR 010280

## Education:

- Han Guen Yu completed his M.S. degree and has started his Ph.D. research.
- A new laboratory MEMS Course, EE 597A: Introduction to MEMS Technology, with a Course Enrollment of 15 Students was offered in Spring Semester 2003
- A graduate class in Crystal Chemistry was substantially revised and offered Spring 2003
- One undergraduate (Ioanna Mina) gained lab experience in piezoelectric films



## Teaching Assistant with Students using Interference Microscope



## Optical Picture of the MEMS Test Chip Fabricated by the EE 597A Students

## Outreach:

The PI's supervised research projects under the NSF funded Research Experience for Undergraduates (REU) students program. Lectured in the associate degree program in Nanofabrication Manufacturing Technology program.